Safe-Duct 7

Enclosed Conductor Bar System

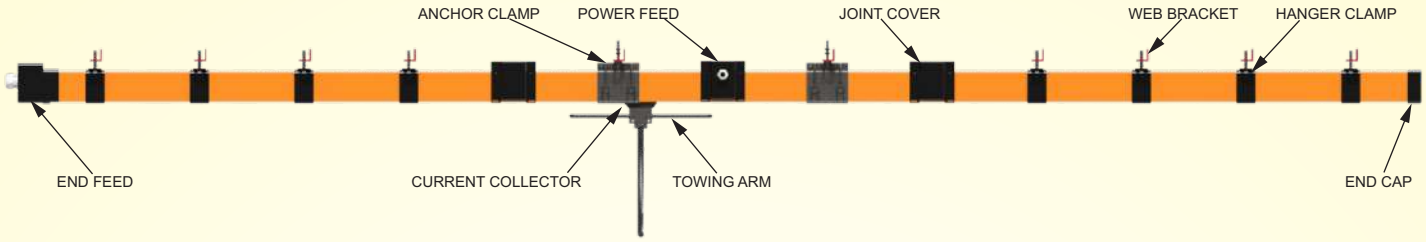
CE

Mobile Electrification Systems

23/10/24

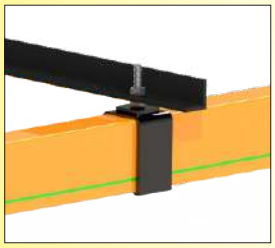
Enclosed Conductor Bar System (7 Bar)

GENERAL ARRANGEMENT SYSTEM

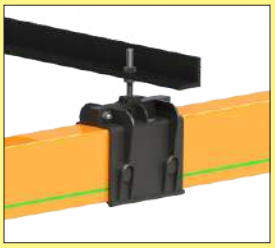


COMPONENTS

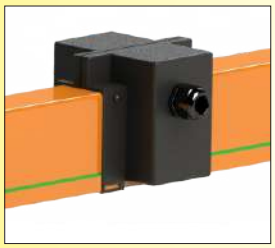
Hanger Clamp GFN



Anchor Clamp / Joint Cover GFN



Centre Power Feed



End Power Feed

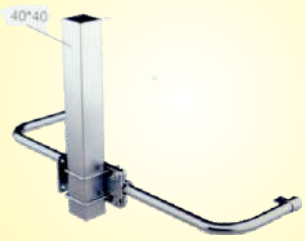
Current Collector 40A

End Cap

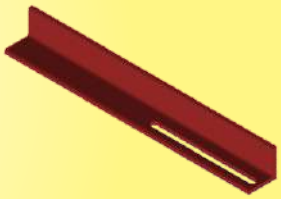
Joint Cover GFN

Towing Arm

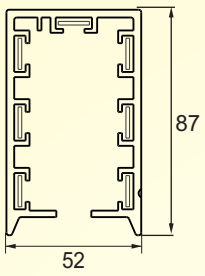
Collector Bracket



Web Bracket

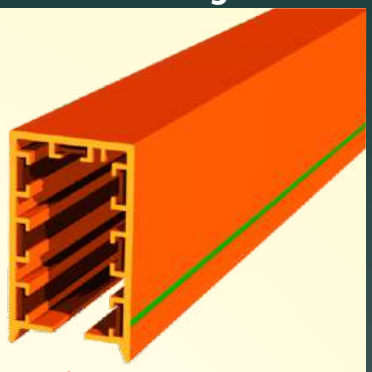


Enclosed Conductor Bar System (7 Bar)

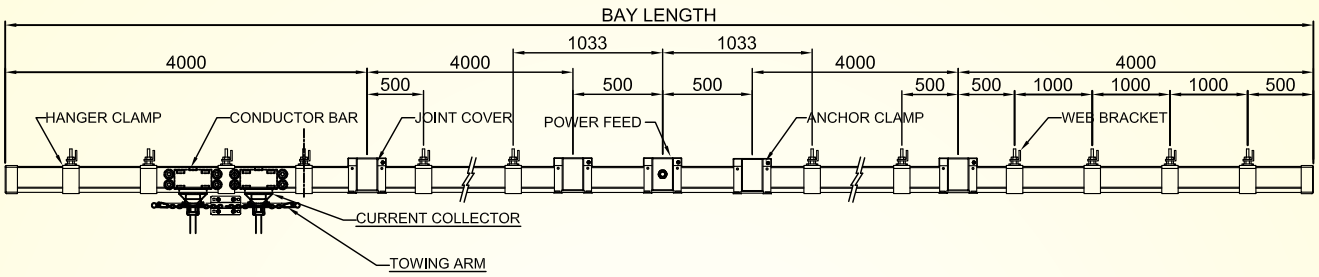


Multi Conductor Bar

CE



SYSTEM ARRANGEMENT FOR Safe-Duct 7 Bar (40-140Amps.)



Safe-Duct 7 Bar The enclosed conductor system is a modern design, accident proof with moving current collector to feed mobile equipments such as cranes, hoists conveyors, textiles & computerised ware houses etc.

FEATURES

- Safety : due to its isolation it is a protected line.
- Small dimensions.
- The difference due to expansion are absorbed in every joint of the line. It is not required to place special expansion joints.
- To extend an existing line is very easy, just adding new tracks.
- Quick mounting: in one passing the line is ready to work.
- The electric feed can be done at the beginning of the line or at every joint of the line.
- It is very easy to change a track already assembled without moving the rest of them
- Working voltage: up to 600V
- Working temperature: from -30°C to +55°C
- Degree of protection: IP20 (without rubber sealing). Ip23 (with rubber sealing)

Technical data Safe-Duct 7 Multi Conductor Bar System

Conductor Bar System	Safe-Duct 7-C				Safe-Duct 7					
Type	Continuous strip				Bolted in Type					
Model No	SD2-40C	SD2-60C	SD2-80C	SD2-100C	SD2-40	SD2-60	SD2-80	SD2-100	SD2-140	SD2-280
Nominal current(A) At 100% Duty and 35°C	40	60	80	100	40	60	80	100	140	280 - 3P + E
DC Resistance (Ω/M) at +35°C	0.0019	0.0011	0.0009	0.0007	0.0019	0.0011	0.0009	0.0007	0.0004	0.0002
Impedance (Ω/M) at +35°C	0.0021	0.0012	0.0008	0.0008	0.0021	0.0012	0.0008	0.0008	0.0004	0.0002
Voltage grade [V]	600									
Support Spacing [mm]	1000/1333/1500									
Bar Length [mm]	4000									
Outside dimensions [mm]	87 x 52									
Permissible ambient temperature	-30°C + 55°C (Standard Insulation)									

SD2-280 - 4 poles with parallel connections.

The Intermittent rating for conductors

RATING				
ALLOWABLE CURRENT (AMPS)	100%	80%	60%	40%
	40	44	51	63
	60	66	77	94
	80	88	103	126
	100	111	129	158
	140	155	180	221

DSL - LOAD CALCULATION

Sizing systems for multiple hoists, motors, and/or multiple cranes

For a single crane : Size the conductor bar to handle 100% of the current draw of the largest motor or group of motors, plus 50% of the combined current draw of the other motors on the vehicle.

For multiple cranes or vehicles : Determine the current draw for each crane/vehicle, using the method above. Sum all the current draws for each crane/vehicle, then multiply the sum by the appropriate demand factor :

# of Crane/vehicles	Demand Factor
2	.95
3	.91
4	.87
5	.84
6	.81
7	.78

The most effective way to demonstrate each factor is with examples based upon the following :

Example :

10 Tonne overhead crane conductor system length 100 meters.

Maximum Temperature Range 0 degrees C, to 35 degrees C.

Environmental Conditions - Good Indoors.

Supply - 415 volts, 3 phase, 50 Cycles, with Single End Powerfeed.

Allowable volt drop in downshop conductors - 3%

Crane Motor Details :

	KW	Normal Motor Running Currents	Motor Starting Currents
Hoist (H)	20	35A	70A
Cross Travel (CT)	3	5.25A	12A
Long Travel Twin Drive	2 x 2	7A	14A

Thermal Electrical Loading :

The total electrical load is the sum of the simultaneous individual electrical loads produced by normal running. There are two types of load to be considered :

1 . Continuous load

2 . Intermittent load

On systems with more than one crane, determine the thermal electrical loading by considering the combination of the running currents of the motors marked.

No of Cranes	Largest Motor of All Cranes	Second Largest Motor of All Cranes	Third Largest Motor of All Cranes	Fourth Largest Motor of All Cranes
1	*	*		
2	*	*	*	
3	*	*	*	
4	*	*	*	*

In the above example the total thermal load would be 35 + 7 = 42A. Therefore Safe-Duct - SD60 - 60Amps would be satisfactory.

INTENSITY DURING THE START-UP PHASE :

(2 seconds maximum)

Take into account the number of motors starting up simultaneously and those already in operation, then calculate the corresponding intensity. When the start-up intensity is not known, find the approximate value as follows :

Standard squirrel cage motor — 5 x normal running current

Type rotor motors - as used on some hoists — 7 x normal running current

Slip Ring motors — 2 x normal running current

In the absence of information about running simultaneity of crane, please refer to the table hereunder :

Number of crane on the line	For all the Cranes (IN)							
	1" motor		2" motor		3" motor		4" motor	
	I_d	I_n	I_d	I_n	I_d	I_n	I_d	I_n
1	x			x				
2	x			x		x		
3	x		x			x		
4	x		x			x		x

INSTALLATION PICTURES

ENQUIRY FORM

1- Power Consumer Type :

(traveling crane, monorail, transtocker etc.)

2 -Length of the Installation : ⌊_____⌋ m

3 - Type of Current : ☐ AC ☐ DC ⌊_____⌋ V ⌊_____⌋ Hz

4 - Number of Poles : ⌊_____⌋ phase ⌊_____⌋ earth ⌊_____⌋ neutral

5 - Current (if know) : ⌊_____⌋ A

6 - Features of Crans :

MOTOR (IN KW)	CRANE 1	CRANE 2	CRANE 3
HOST			
LONG TRAVEL			
CROSS TRAVEL			
OTHERS (PLEASE SPECIFY)			

7 - Type of Motor Start-Up (direct vanator, additional resistors)

8 - Stationary Use : ☐ yes ☐ no

9 - Duty Cycle Factor (maximum rate of use per 10 min period) : ⌊_____⌋ %

10 - Operation : ☐ indoors ☐ outdoors

11 - Temperature : min ⌊_____⌋ °c max ⌊_____⌋ °c

12 - Permissible voltage Drop : in continuous: ⌊_____⌋ (default value : 2%)

at start-up: ⌊_____⌋ (default value : 5%)

13 - Installation Environment (dust, humidity, chemical agents) :

14 - Traveling Speed of Mobile : ⌊_____⌋ m/mn

15 - Number and Position of Feeding Points along the line :

16 - Supply of Fixing Brackets (see page 15) : ☐ yes ☐ no

17 - Other Information about the Installation :

18 - For Installations with curves, Transfers or Other special Elements,

Please Include Drawing or a sketch

19 - Contact Data :

- Company :
- For the attention of :
- Department :
- Postal address :
- Telephone :
- Fax :
- E-mail :

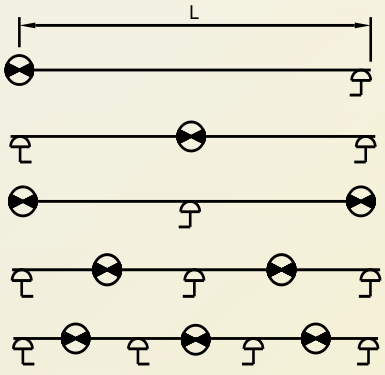
Enclosed Conductor Bar System (7 Bar)

TECHNICAL PARAMETERS COMMON TO ALL

Effects of various power feed positions on Volt Drop Calculations.

Selection of feed-in points. The feed-in point for every application must be selected because the length L between power feed and conductor rail end is used for calculating the voltage drop. Following feed - in points can normally be used.

Following feed-in points can normally be used.



End. feed.	LVD = L
Centre feed.	LVD = L/2
Two End feeds.	LVD = L/4
Two Feed Both L/6 in from end	LVD = L/6
Three Feed at L/10 in from ends and centre	LVD = L/10

Voltage Drop

The allowable volt drop determines, the maximum allowable resistance of conductor. The value of volt drop within a conductor system is effected by effective length of system and current drawn.

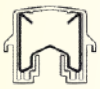
Volt Drop Calcultion

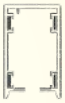
For A. C. Machine 3 phase

$\triangle U$ Volt drop = length (D) x Impedance (Z) X Current (I) x $\sqrt{3}$

$$U\ \% = \frac{\triangle U}{U\,n} \times 100\ [\ \%\ ]$$

PRODUCT RANGE - INDIVIDUAL

System Design	Insulated Conductor Bar				Heavy Conductor Bar	
Conductor Bar System	Safeline-W	Safeline-M	Safeline-U	Safeline-C	Safeline-V	Safeline-V
Type of Joints	Bolted	Pin	Joint Less	Joint Less	Aluminium	Copper
SAFELINE						
Nominal Current (A)	60-400	60-315	70-100	40-140	500-800-1000-1250	500-800-1000-1250
Volts (V)	600	600	600	600	600	600
Support Spacing (m)	1.125	1.125	1.2	1.2	2.25	2.25
Bar Length	4500	4500	4500	4800	4500	4500
Outside Dimensions (mm)	23 x 27	20 x 22	74 x 14	34 x 19	42 x 32	42 x 32

System Design	Enclosed Conductor Bar			
Conductor Bar System	Safe-Duct 5	Safe-Duct 7	Safe-Duct 4	Safe-Duct Mini
Type of Joints	Bolted/Joint Less	Bolted/Joint Less	Bolted/Joint Less	Bolted/Joint Less
Safe-Duct Enclosed Conductor Bar System				
Nominal Current (A)	40-60-80-100-140-200	40-60-80-100-140	40-60-80-100-140	40-60
Volts (V)	600	600	600	600
Support Spacing (m)	1.333	1000	1000	1000
Bar Length	4000	4000	4000	4000
Outside Dimensions (mm)	85 x 56	87 x 52	87 x 52	60 x 40

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